In The Claims:

Claims 1-9 (Cancelled).

10. (Currently Amended) A method for monitoring the environment within a microfluidic device, comprising the steps of:

immobilizing a first monitor structure in a channel of the microfluidic device by:

mixing a dye in a pre-polymer mixture [and providing the same as] to provide a pregel mixture;

injecting the pregel in the channel of the microfluidic device; and

polymerizing the pregel mixture in the channel to form the first monitor structure;

passing fluid over the monitor structure in the channel; [and]

providing a second monitor structure in the channel of the microfluidic device; and

passing fluid over the second monitor structure in the channel;

whereby:

the first monitor structure generates a visual display unrelated to a potential change in the [independent of the] size of the first monitor structure in response to exposure to a first parameter of the fluid [having a predetermined value]; and

the second monitor structure generates a visual display in response to exposure to a second parameter of the fluid [having a predetermined value].

Claims 11-12 (Cancelled).

13. (Previously Presented) The method of claim 10 comprising the additional step of cleaning the channel of the microfluidic device after polymerizing the pregel mixture.

14. (Previously Presented) The method of claim 10 wherein the pre-polymer mixture includes

15. (Previously Presented) The method of claim 10 wherein the pre-polymer mixture includes 2-hydroxy ethyl methacrylate (HEMA), acrylic acid (AA), ethylene glycol dimethacrylate (EGDMA), and 2,2-dimethoxy-2-phenylacetophenone (DMPA).

Second claim 15 (Cancelled).

16. (Previously Presented) The method of claim 10 wherein the dye is congo red.

Claim 17 (Cancelled).

18. (Currently Amended) A method for monitoring the environment within a microfluidic device, comprising the steps of:

mixing a dye in a pre-polymer mixture to provide a pregel mixture;

injecting the pregel mixture into a channel of the microfluidic device;

polymerizing the pregel mixture in the channel to form a first monitor structure;

passing fluid over the first monitor structure in the channel such that the dye changes color in response to a parameter of the fluid [having a predetermined value]; and

passing fluid over a second monitor structure provided in the channel such that the second monitor structure changes color in response to a second parameter of the fluid [having a predetermined value].

Claim 19. (Cancelled)

20. (Original) The method of claim 18 wherein the monitor structure changes dimension in response to a predetermined value of a second parameter of the fluid.

21. (Original) The method of claim 18 comprising the additional step of cleaning the

channel of the microfluidic device after polymerizing the pregel.

22. (Original) The method of claim 18 wherein the pre-polymer mixture includes a hydrogel, a photo-initiator and a cross-linker.

23. (Original) The method of claim 18 wherein the pre-polymer mixture includes 2-hydroxy ethyl methacrylate (HEMA), acrylic acid (AA), ethylene glycol dimethacrylate (EGDMA), and 2,2-dimethoxy-2-phenylacetophenone (DMPA).

24. (Original) The method of claim 18 wherein the dye is phenolphthalein.

25. (Original) The method of claim 18 wherein the dye is congo red.

Claim 26. (Cancelled)

27. (Previously Presented) The method of claim18 comprising the additional steps of:
mixing a second dye in a second pre-polymer mixture to provide a second pregel mixture;
injecting the second pregel mixture into the channel of the microfluidic device; and
polymerizing the second pregel mixture in the channel to form the second monitor structure.

28. (Previously Presented) The method of claim 10 wherein the dye is phenolphthalein.

Claims 29-36 (Cancelled).